

MALAYSIA-THAILAND
Joint Authority

MALAYSIA – THAILAND JOINT AUTHORITY

PROCEDURES

FOR

PRODUCTION OPERATIONS

(REVISION I)

14th DECEMBER 2009

MTJA

*FOR THE EXPLORATION AND EXPLOITATION OF THE RESOURCES OF THE SEA-BED
OF THE TWO COUNTRIES IN THE GULF OF THAILAND (JOINT DEVELOPMENT AREA)*

MALAYSIA-THAILAND JOINT AUTHORITY
PROCEDURES FOR PRODUCTION OPERATIONS

The Malaysia-Thailand Joint Authority (MTJA) hereby makes the following Procedures:

PART I

PRELIMINARY

1. These Procedures may be cited as the Malaysia-Thailand Joint Authority Procedures for Production Operations and shall come into force on 14th December 2009.

2. EXCEPTION AND EXEMPTION

Any Contractor may under special circumstances apply in writing to the MTJA for exception to or exemption from these Procedures, and the MTJA may grant such exception or exemption.

3. AMENDMENT

- (1) These Procedures may be amended by the MTJA from time to time by giving written notice to the Contractor.
- (2) In amending these Procedures, the MTJA shall also take into consideration incremental expenditures, which may be incurred by the Contractor in complying with the amended Procedures.

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PART II

PRODUCTION OPERATIONS

4. NOTICE OF INTENT

The Contractor shall submit a notice of intent to commence production operations and a start-up procedure to the MTJA at least 30 days before the commencement of production operations from any newly constructed offshore facilities, structures and pipelines.

5. OPERATING MANUAL

The Contractor shall prepare and submit to the MTJA –

- (1) an operation manual consisting of starting, operation and shutdown procedures which shall outline preventive measures and systems checks required to ensure proper functioning of all shutdown, control and safeguarding systems for production facility, and subsequent update;
- (2) all as-built drawings for facilities, structures and pipelines; and
- (3) all as-built drawings for facilities, structures and pipelines whenever significant modifications are carried out.

6. ANNUAL SHUTDOWN PLAN

The Contractor shall submit to the MTJA an annual production shutdown plan stating the reasons for and the duration of the shutdown(s) before 1st January of each calendar year. The Contractor shall also submit a summary of the actual shutdown relating to the operation during shutdown(s) to the MTJA within 30 days after the shutdown.

7. UNPLANNED SHUTDOWN

The Contractor shall notify the MTJA promptly of any major unplanned production shutdown estimated to exceed 24 hours. The Contractor shall submit a summary of the actual shutdown, stating reasons for such shutdown to the MTJA within 14 days after the event of unplanned shutdown.

8. OPERATIONS LOG AND REPORT

- (1) The Contractor shall ensure that daily operations log is maintained to record significant daily operational activities. The duration of keeping the log at site is at the discretion of the Contractor but shall not be less than one year. The records shall be made available within reasonable time for inspection by an officer of the MTJA.
- (2) The Contractor shall submit to the MTJA a daily and a monthly production report which shall contain information in respect of, but not limited to the followings:
 - (a) natural gas, condensate, crude oil and produced water per platform and per field;
 - (b) natural gas sales;
 - (c) natural gas liquid, condensate and crude oil sales and stocks; and
 - (d) gas flaring and venting.

PART III

RESERVOIR MANAGEMENT AND PETROLEUM CONSERVATION

9. RESERVOIR MANAGEMENT

- (1) The Contractor shall submit in writing, not less than 30 days, before commencement of petroleum production in each field to the MTJA for review -

- (a) a reservoir management plan which shall contain among others the requirement on reservoir data acquisition, the monitoring and analysis of reservoir performance as appropriate through the field life cycle, and the carrying out of periodic reviews and studies for further development. The purpose of a reservoir management plan is to ensure prudent reservoir management through efficient field development by economically optimising hydrocarbon recovery and maintaining optimal field performance; and
 - (b) the production plan throughout an estimated field life, based on the average expected production potential and availability by the reservoirs and in accordance with safe operating conditions and with good petroleum industry practices, as follows –
 - (i) the first calendar year, on monthly basis;
 - (ii) for the succeeding four calendar years, on quarterly basis; and
 - (iii) for the remaining calendar years on annual basis.
- (2) For the subsequent years after the commencement of production, the Contractor shall submit the reservoir management plan and the production plan to the MTJA before 1st October of each calendar year.
- (3) At the end of each calendar Year, the Contractor shall submit an allocation of production of natural gas, natural gas liquid, condensate, crude oil and water for each production interval, production string, production platform, production station, production field and terminal with detailed calculation to the MTJA, on monthly and quarterly basis by the first quarter of the MTJA, on monthly basis by the first quarter of the following calendar Year.

10. GAS FLARING AND VENTING

During production operations, gas shall not be flared and vented without prior approval of the MTJA, except as provided herein –

- (1) when the gas is released from condensate stabilisation units and the utilization of such gas cannot be economically justified;
- (2) during cleaning up of a well and well evaluation tests not exceeding a continuous testing period of 48 hours;
- (3) when the gas is released during emergency, (e.g. emergency shutdowns, blanketing or pressure relief operations), or as part of normal production operations (e.g. instrument gas);
- (4) during regular scheduled facilities maintenance and inspection of gas related equipment not exceeding one week;
- (5) during commissioning of the gas related equipment not exceeding two weeks;
- (6) when gas vapours are released from storage vessel including tanks, specifically surge tanks and free-water knock-out vessels, and if such gas vapours cannot be economically utilised;
- (7) during temporary equipment failure, e.g. compressor, but not exceeding 72 hours;
- (8) when regular scheduled preventive maintenance, inspection and testing are conducted; and
- (9) when the gas vapours are released from the CO₂ removal system.

11. PRODUCTION TESTING

(1) Deliverability Test for Gas Well

- (a) Upon initial completion or recompletion of gas well, the Contractor shall carry out the initial deliverability test within 90 days from production commencement or at the first safe opportunity available. The test shall be carried out on each separated producing interval of the well at least three flow rates.
- (b) Subsequent to the initial deliverability test, if a single rate test indicates significant delivery change, the periodical deliverability test shall be

conducted at least once a year, and such deliverability test shall be conducted at least three different flow rates on all active producing wells.

The results of the tests carried out in accordance with subparagraphs (a) and (b) shall be submitted to the MTJA within 60 days from the completion of the tests.

(2) Production Rate Test for Oil Well

Initial and periodic production rate tests shall be conducted for all active producing wells, and the results thereof shall be submitted to the MTJA within 60 days from the completion of the tests.

(3) Bottom Hole Pressure Survey

(a) Transient Pressure Survey

- (i) The Contractor shall conduct an initial flowing bottom hole pressure survey and build-up or drawdown pressure survey for newly completed or recompleted well. The Contractor shall inform the MTJA if any survey is not required after the reservoir pressure trend has been established.
- (ii) The Contractor shall conduct a survey at the first safe and practical opportunity available.
- (iii) When wellbore evaluation is deemed necessary, a periodic survey shall be conducted, in accordance with prudent reservoir management practice, on each active producing well.
- (iv) The MTJA may also request the periodic survey to be conducted by the Contractor within operational constraint.

(b) Static Bottom Hole Pressure Survey

The Contractor shall conduct a static bottom hole pressure survey on at least 50 percent of the total active producing wells in each field annually for the first two years of its producing life and at least 25 percent of total active producing wells thereafter.

The results of the survey carried out in accordance with subparagraph (a) and (b) shall be submitted to the MTJA within 60 days of the completion of a particular survey.

PART IV

METERING

12. PREVENT BYPASSING SALES METER

No bypassing of the sales gas metering system is allowed for normal operations after commissioning and startup. For the purpose of commissioning and startup, should a bypass line be required, it shall be provided with a blind or a positive shutoff double block and bleed valve. This bleed valve shall be sealed during normal operation.

13. UNIT OF MEASUREMENT

The base (reference or standard) condition for metering system shall be in accordance with the standard of the American Gas Association (AGA) or the American Petroleum Institute (API). The base condition is defined as a pressure of 14.73 pound per square inches absolute (psia) at a temperature 60 degree Fahrenheit (°F) or other international standards acceptable to the MTJA.

14. STANDARD OF METERING SYSTEM

- (1) The sales gas meter, the installation of gas meter, method of measurement, and calibration thereof shall be in accordance with the standard of the AGA or other international standards acceptable to the MTJA.
- (2) The natural gas liquid, condensate or crude oil sales meter shall be in accordance with the standard of both API and the American Society for Testing and Materials (ASTM) or other international standards acceptable to the MTJA.

15. MEASUREMENT REQUIREMENT

- (1) The Contractor shall carry out a financial exposure and cost benefit analysis during evaluation of the concept and determine the location for the installation of the metering system, metering system configuration and level of accuracy required. The Contractor shall submit the preliminary analysis to the MTJA including, but not limited to, the following items –
 - (a) the measurement method and standards;
 - (b) the proposed system accuracy;
 - (c) the production accounting exposure analysis;
 - (d) the metering cost estimate;
 - (e) the field area and installation layout with main pipelines;
 - (f) the proposed sizing of the metering system; and
 - (g) the preliminary system configuration.
- (2) Before implementation of a metering system, the Contractor shall submit –
 - (a) the specification of metering system;
 - (b) the design formula and calculation;
 - (c) the calculation of overall accuracy and uncertainty of the system; and
 - (d) the relevant drawings.
- (3) Prior to the official use of the metering system, the Contractor shall submit an application together with all relevant data to the MTJA for review and approval. The MTJA shall give approval, if it is satisfied with the system performance, either based on the data submitted or after carrying out an inspection of the metering installation.
- (4) The Contractor shall establish and maintain an up-to-date file of the metering system containing all specifications, calculations and as-built drawing. The file should also contain reports concerning verification, revisions, design,

fabrication, installation and commissioning including inspection and test programs and operation manual and other relevant documentation.

(5) Sales Gas Metering System –

(a) The orifice meter design and installation shall be in accordance with the AGA standard or other international standards acceptable to the MTJA. The number of meter tubes shall be based on the design capacity, and a complete spare meter run is to be provided.

(b) The upstream and downstream meter tubes pipe length from the orifice plate shall have the lengths as specified in “zero additional uncertainty”. The meter tube shall be installed in a manner so that it can be disassembled for periodical inspection and maintenance of the inner wall both upstream and downstream. The use of flow straightening vanes, drain and vent holes in the meter tube shall follow the recommendations of the AGA standard or other international standards acceptable to the MTJA.

(c) Where the Gas Ultrasonic Flow Meter for a gas metering system is used, the design of such metering system shall follow the AGA standard or other international standards acceptable to the MTJA.

(d) Instrument Requirement –

(i) The instrument loops shall be kept separately from other types of instrumentation and power supply cabling in the area of use.

(ii) The pressure sensor shall be as short as possible and the upstream and the downstream pressure tapping shall be in the same axial plane and shall be above the central axis of the meter tube. The accuracy requirement of the differential pressure loop shall have accuracy better than ± 0.25 percent of span.

(iii) Each meter run shall be provided with the facilities to measure online density. The accuracy requirement for densitometer shall be better than ± 0.2 percent of reading. Alternatively, upon approval by the MTJA, the density can be derived from the Gas Chromatograph (GC) installed at the metering header.

- (iv) The accuracy of temperature measurement shall be better than +/- 0.54 degree Fahrenheit (°F).
- (v) The accuracy of static pressure measurement shall be better than +/- 0.25 percent of span.
- (vi) The Gas Chromatograph shall be in accordance with the AGA standard or other international standards acceptable to the MTJA. The analysis shall be normalised to 100 percent and the result expressed in percentage of mole fraction. The GC computer system shall also be capable of calculating the following based on compositional data –
 - compressibility factor at reference condition;
 - gross calorific Value;
 - Wobbe Index;
 - relative density (Real/Ideal); and
 - density at reference condition.
- (vii) The sampling system shall ensure that the gas sample to the GC is representative and any liquid contamination is prevented in the sample tube. Where no online GC is installed and an automatic gas sampler is used, the automatic gas sampler shall be able to collect and store representative gas sample at line condition for analysis.

(6) Sales Liquid Hydrocarbon Metering System

- (a) A field-mounted skid and instrumentation shall comprise the following major component parts:
 - (i) the minimum number of parallel meter runs required from the specified maximum and minimum flow rates at the specified accuracy with one complete spare meter run;
 - (ii) flow proportional automatic sampling system;
 - (iii) all associated pipe-work, valve fittings, access stairs, walkways for operation and maintenance, lifting equipment;

- (iv) all transducer and instrumentation necessary for automatic meter proving operation and continuous measurement of mass and volumetric quantities and flowrate;
- (v) totaliser; and
- (vi) a permanent meter proving facility shall be provided and can be of any of the following methods:
 - Pipe Provers; or
 - Master Meter

All equipments within the skid shall be arranged such that it can be safely and conveniently accessible for operation, validation and maintenance. The system shall be designed to allow any subsequent re-calibration of the conventional pipe prover or small volume prover on site with a portable master pipe prover, master meter calibration equipment, tank prover-master meter or calibration can.

- (b) The metering control panel and computing facilities shall comprise the following major component parts –
 - (i) The computer system (with full backup) consisting of flow computers, prover computer and station computer;
 - (ii) The control panel which shall include all terminations, computing devices, indicators, alarm system and controls necessary for operation from the control panel; and
 - (iii) All other items not specifically mention but necessary for the functioning of the systems, including equipment for testing and calibration.

(c) Instrument Requirement

- (i) A pulse comparator shall be installed which give signals and triggers an alarm when a pre-set number of error pulse occurs on either of the transmission lines. Where the pulse error alarm is determined by an error rate, the error threshold shall be less than 1 count in 100,000.

- (ii) Any conversion of signals from analog to digital shall not contribute systematic errors to the measurement. Total inaccuracy in the analog to digital conversion, including resolution, drift, linearity, repeatability and other random errors shall be better than +/- 0.025 percent of full scale. Where a signal analog to digital conversion is used, a back-up converter is required.
 - (iii) The accuracy for the complete circuit of for temperature measurement shall be better than +/- 0.54 degree Fahrenheit (°F).
 - (iv) The accuracy for the complete pressure loop shall be better than +/- 0.25 percent of span.
- (d) Any determinations of density, gravity, average temperature and volume of sediment and water in natural gas liquid, condensate and crude oil shall be in compliance with the principles and methods of the American Society for Testing and Materials (ASTM) or other standards acceptable to the MTJA.

16. CALIBRATION

(1) General

The metering system for both gas and liquid hydrocarbon sales meter shall be calibrated with test equipment having certified traceability to international standards.

Any instruments used for calibration of all relevant parts of the metering system shall be calibrated and certified by any other independent laboratory or agencies acceptable to the MTJA.

(2) Instrument Calibration

All relevant instruments used in the metering system shall be calibrated and certified by the manufacturer from which traceability can be proved.

(3) Proving System Calibration

The proving system for liquid hydrocarbon shall be calibrated at the vendor's workplace as part of their system checks and at the installation site immediately prior to start up. The detail calibration method used and periodical calibration will depend on the type of proving system.

(a) Conventional Pipe Prover Calibration

The pipe prover shall be calibrated by using waterdraw or master-meter method at vendor's workplace for system checks. The pipe prover shall also be calibrated by using the waterdraw or master meter method at the installation site for Site Acceptance Test immediately prior to start up and on a two-yearly basis. If the master meter method is used, the meter shall be calibrated at the installation site by using the waterdraw method. A similar method of calibration may be conducted both at the vendor's factory and at the installation site.

Test measures used for the pipe prover volume calibration shall be certified traceable to international standards.

Both calibrations methods shall be in accordance with the API standard. All pipe prover calibrations shall be witnessed by the MTJA's officer or an independent certification authority acceptable to the MTJA and attested to in writing.

The pipe prover shall be calibrated with at least two separate volumes (or preferably at four volumes). The pipe prover shall be capable of producing corrected volumes for five consecutive runs in any given direction within +/- 0.01 percent of the average. The average of the five consecutive round trips volumes of all flow rates shall be used as the base volume of the pipe prover.

The pipe prover volume calibration process shall be repeated at a flow rate change of at least 25 percent to verify the possible leak during the base volume calibration. The corrected volumes for three consecutive runs at any given direction shall repeat within +/- 0.01 percent of the average. The average of three round trips volumes shall not deviate from newly established prover base volume by +/- 0.02 percent.

Copies of the calibration certificates for each of these and all subsequent calibrations shall be documented by the Contractor in the validation report and shall be submitted to the MTJA.

Any maintenance work on the pipe prover that could affect the swept volume e.g. changes of sphere detectors and switches should not be undertaken without prior notice to the MTJA who will advise if a calibration is required.

(b) Master-Meter Prover Calibration

The master meter prover shall be calibrated with the same liquid or other liquid as appropriate that will be used during operation of the sales meter. A linearity curve of the master meter prover shall be developed at 10 points over the range of the meter to operate. The meter factor that is applied to the master meter shall be the average value of five (5) consecutive runs repeating within +/- 0.01 percent of the average.

(4) Sales Liquid Hydrocarbon Meter Calibration

Performance tests on each meter shall be performed at vendor's workplace by using water or hydrocarbons. For each type of meter used, the performance of the meter shall, prior to factory acceptance test, be demonstrated by the vendor by calibrating initially on hydrocarbons at 10 points and calibration certificates shall be issue. Six (6) of these points shall span the "Normal Operating Range" and four points shall span low flow down to "Design Minimum". Each test shall consist of five (5) consecutive runs, and the difference between the highest and lowest meter factor. The linearity must be within +/- 0.25 percent over the specified "Normal Operating Flow Range". The vendor or the Contractor shall perform final test and calibration during site testing with field hydrocarbon against meter prover.

During normal operation, the meter shall be initially proved on a weekly basis; thereafter the proving frequency may be done on a monthly basis or at any longer interval as agreed to by the MTJA, provided that the report of the meter factor scatter is acceptable to the MTJA and a meter factor control chart is established.

For tanker loading systems, any meter on-stream shall be proved at least once regardless of the duration of the loading. Additional proving is required on stream(s) where conditions have changed and a "prove required" alarm is triggered.

(5) Calibration Procedures

A validation and calibration procedure shall be prepared to detail out the step by step validation and calibration of each individual instrument in the system. The procedure shall also include –

- (a) calibration procedures;
- (b) frequency of validation and calibration of the instrument;
- (c) flow calculation – all formula used in the calculation of the flow; and
- (d) listing of equipment used in the validation exercise.

A set of validation check sheets shall also be included and all readings obtained during each calibration shall be recorded on the validation check sheets. Adjustment shall be made when a reading is out of tolerance. After any adjustment, the complete validation check shall be repeated.

(6) Frequency of Calibration and Inspection

Contractor shall detail out the frequency of validation, calibration and inspection of each of the metering system and submit to the MTJA for consideration.

17. METERING OPERATING MANUAL

The Operating Manual shall be prepared for the purpose of providing operational guideline in performing metering activities. It shall then describe the operation of the system which includes, but not limited to, the following –

- (1) overall process description;
- (2) metering system description;

- (3) metering instrument specification;
- (4) computer system operation (including the computer read codes) and actions taken on alarms;
- (5) metering system operation;
- (6) metering sealing procedure; and
- (7) sampling procedure.

18. VOLUME CALCULATION

The Contractor shall submit the full details of calculation and formulae used for sales of petroleum according to the standard of the AGA, or the API or other standard acceptable to the MTJA.

19. RESTRICTION OF SALES METER OPERATION

In measuring the volume of natural gas, natural gas liquid, condensate or crude oil, the Contractor shall –

- (1) not use the meter with the pressure and flow rate of natural gas liquid, condensate or crude oil higher or lower than its maximum or minimum capacity;
- (2) not use the meter with natural gas liquid or crude oil which has specific gravity range beyond those specified in the meter specification;
- (3) use the pressure surge tank or other equipment acceptable to the MTJA to maintain pressure level of natural gas liquid, condensate or crude oil;
- (4) prevent the meter to shock pressures which are greater than its maximum working pressure;
- (5) not reset the totaliser; and

- (6) not disassemble the meter or its facilities, except with the permission of the officer of the MTJA.

20. SALES METER MALFUNCTION

In the event the sales meter has become damaged, malfunction, is under repair or out of service by whatever reason, the Contractor shall immediately notify the MTJA of such occurrence and estimate the volume of natural gas, natural gas liquid, condensate or crude oil delivered through the period during which the equipment has become damaged, malfunction, is under repair or out of service on the basis of the best data available. Such estimate shall be submitted for approval of the MTJA.

21. METERING STATION RECORD KEEPING

Log Books and Records

- (1) The Contractor shall maintain a log book for the prover system detailing all calibrations, sphere detector serial numbers and any maintenance work done on the proving facilities loop and its associated equipment.
- (2) A log book for the metering system shall be kept preferably for each meter showing details of –
 - (a) the type and identification particulars including location and production measured;
 - (b) the totaliser reading(s) where applicable on commencement of offloading;
 - (c) all mechanical or electrical repairs or adjustments made to the meter or its read-out equipment and other parts of the metering system;
 - (d) the metering errors due to equipment malfunction, incorrect operation, etc. including data, time and totaliser readings; both at the time or recognition of an error condition and when remedial action is completed;
 - (e) the alarms, together with reasons and operators response;

- (f) any breakdown of meter or withdrawal from normal service, including time and totaliser readings; and
 - (g) any replacement of security seals when broken.
- (3) The Contractor shall also keep a meter proving record for each meter giving the details of each run such as prove flow rate, pressure, temperature, meter factor etc. This record shall include a running plot or similar control chart so that any undue change or fluctuation in meter factors may be easily detected.
- (4) A manual log or automatic recording should also be kept, at intervals of not more than one hour, of the following parameters:
- (a) the totaliser readings of all meters;
 - (b) the meter flow rates (also relevant meter factors), pressure and temperature, and (if measured continuously) density;
 - (c) any other parameters such as liquid density and percentage of basic sediment and water content; and
 - (d) the records of parameters such as meter flow rate, liquid temperature and density which shall be kept for at least three months. All above records shall be made available within reasonable time for inspection by the MTJA.

PART V

HEALTH, SAFETY AND ENVIRONMENT

22. HEALTH, SAFETY AND ENVIRONMENT (HSE)

Part VI of the MTJA Procedures for Drilling Operations of 14th December 2009 (First Revision) shall apply to this procedure.

In addition to the above, the Contractor shall establish a HSE Management System for petroleum production operations and submit it to the MTJA before commencing the production operations.

The Contractor is also required to review the HSE Management System periodically. The updated system shall be promptly submitted to the MTJA.

In addition to the above requirement, the Contractor shall follow the good petroleum industry practice.

23. DANGEROUS PETROLEUM VESSEL ANCHORAGES

The Contractor shall inform and liaise with an incoming loading vessel regarding information on dangerous petroleum vessel anchorages, prohibited areas, and non-dangerous area in the vicinity of the Contractor's storage vessel or platform.

24. INSPECTION OF LOADING VESSEL

Before starting petroleum loading operation, the Contractor shall inspect a loading vessel on the following, but not limited to –

- (1) fire alarm system;
- (2) fire fighting equipment;
- (3) inert gas system;
- (4) vessel integrity;
- (5) survival equipment, e.g. survival craft, life raft, life jacket, life boat; and
- (6) licenses and vessel certificates.

25. POLLUTION PREVENTION

- (1) Not less than 30 days before commencing petroleum production, the Contractor shall prepare and submit to the MTJA a contingency plan which shall include, but not limited to, description of procedure, personnel, including a third party, chemicals and equipment that will be used in control, clean-up, and reporting of any pollution resulting from spill of oil, which might occur

during production operations. The contingency plan shall be updated, whenever applicable, and promptly submitted to the MTJA.

(2) The Contractor shall ensure that the disposal, discharge and emission of wastes from production operations comply with, but not limited to, the following provisions –

(a) unused equipment or surplus materials shall not be disposed of into the sea, except under emergency situations necessary for purpose of securing the safety of platform and people onboard the platform;

(b) atmospheric emission from platform that shall not be toxic or cause deterioration of air quality or odor beyond the limit of good petroleum industry practice;

(c) solid or liquid containing chemicals or other substances in quantities or concentrations which are hazardous or toxic to the marine environment shall not be disposed of into the sea;

(d) radioactive materials and Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) shall be handled and disposed of in accordance with regulatory requirement;

(e) non-biodegradable, non-combustible solid waste shall be disposed of onshore;

(f) solid combustible waste may be burned, in a properly designed incinerator, provided that burning basket may be used for barges, vessels or rigs when not alongside a production facility;

(g) sump piles shall not be used as a processing devise to treat or skim liquids;


(h) samples of liquid waste shall be taken monthly from the platform at a point prior to final discharge into the sea for analysis to determine presence of oil. The MTJA may request additional tests of the said sample for the presence of any chemicals or substances hazardous and toxic to marine environment. The results shall be submitted to the MTJA within the following month;

- (i) the production platforms shall be inspected, where applicable, regularly to determine whether pollution is occurring; and
- (j) a spill of oil above five barrels and other liquids or solids containing chemicals or substances hazardous and toxic to the marine environment shall be reported to the MTJA immediately. The report shall include the cause, location, volume of spill, action taken, sea state, meteorological conditions, size and appearance of slick.

26. ENFORCEMENT

These Procedures shall replace the Malaysia-Thailand Joint Authority Procedures for Production Operations dated 24th August 2003.

Given on the 14th December 2009



Chief Executive Officer

MALAYSIA-THAILAND JOINT AUTHORITY

(By order and approval of the MTJA Board at the 88th MTJA Board Meeting on 12th December 2009)